GENERAL INTRODUCTION

Mollusca, a word meaning 'soft', includes a variety of invertebrate animals, with soft unsegmented body having a slippery skin and commonly sheltered in a hard calcareous shell of their own secretion. The molluscs are the second largest animal phylum, outnumbered only by the arthropods. They are remarkably diverse with regard to their morphology, anatomy, habits and habitats.

The bivalves (class Bivalvia) are the largest and the best known among the various classes of shelled molluscs, and comprise a large group of highly specialised, laterally compressed molluscs. Bivalves with the shell having two valves, the right and the left do not undergo torsion during ontogeny. Body is bilaterally symmetrical with no distinct head, and is completely enveloped by the mantle, and with a distinct foot adapted for burrowing in sand or mud. Bivalves are considerably less diverse than the gastropods. This class includes clams, mussels, oysters, scallops and some less familiar groups. Many are edible, and from prehistoric times they have formed an important part of the human food. India has extensive bivalve resources in the coastal waters, brackish waters and estuaries which have been utilised either as food or as a source of lime and cement, or sometimes as decorative shellcraft articles.

Bivalves are by far the most important group compared to gastropods and cephalopods for commercial exploitation and utilisation as food. Mussels
and clams are two important sources of protein. They have got the advantage of easy digestibility and are a good and cheap source of minerals and vitamins. Their sedentary habit, easy accessibility, profuse proliferation within a short time, hardy nature etc. make them easily reached and cheaply gathered. Improvement in the production of bivalves requires detailed studies of the habits, growth, reproduction, diseases and predators. During the past half a century a great deal of research on the physiology, behaviour and development of bivalves have been carried out in many of the marine laboratories.

Edible mussels of the Family Mytilidae are not fully exploited as a food resource in spite of their high productivity, natural abundance and worldwide distribution. The mussels live mostly in the intertidal zone but occur to depths of a few fathoms. They remain attached by their byssus threads to rocks and piers, within sheltered harbours and estuaries, and on rocky shores of the open coast, sometimes forming dense beds in the muddy bottom sediments. The mussel landings of the west coast fluctuate between 2500 to 4000 tonnes annually (Mahadevan, 1988). Kurioskose (1973) reported the presence of 17 species of mytilid fauna belonging to 7 genera. In India extensive studies have been made in various aspects like, fishery biology, culture, etc. of the green mussel (*Perna viridis*) and the brown mussel (*P. indica*) as these species occupy a top position among edible bivalves. Except these two species, studies on other related genera and species of the mytilidae are comparatively few. Thus large areas of the biology and bionomics of many mussels remain to be covered, without which complete exploitation of the existing mussel resources in the country is impossible.
The mussel *Musculista senhausia* occurs in large quantities in Cochin backwaters. This is found to form thick beds in bottom sediments in varying densities. It is fished in large quantities from different parts of the backwater and extensively used as poultry feed and manure. Though *M. senhausia* enjoys a wide distribution in the backwaters of Kerala, it is quite surprising to note that, it is not considered as a food mussel, and hence not ranked in the fishery list. Several hundred kilograms of this species are fished from backwaters and merely used as poultry feed. Prospects are amble there to develop this mussel as a highly commercial commodity. Besides poultry feed, several products like fish feed, protein concentrate etc. can be developed from this cheap food source. Though it is seasonal, this huge resource should not be wasted. In Cochin backwater, especially in the harbour area there are possibilities for water contamination by oil spills, but it is interesting to note that the beds of *M. senhausia* are not much affected by the effluents or oil spill. The population is affected only by the freshwater inflow during monsoon. There should be a proper research programme aimed at developing the resource for better utilisation. Its distribution and abundance with regard to different hydrological factors, growth, feeding, biochemical changes, reproduction etc. are the areas which require detailed study. The main objective of the present investigation is to provide sufficient data on these aspects so as to facilitate an economic exploitation of the resources.

The present study is presented here in eight chapters. The general introduction forms the first chapter. The second chapter describes the systematic position of the species. The third chapter deals with the description
of the study area and distribution of the species according to the salinity variation and sediment texture.

The fourth chapter deals with the age and growth of *M. senhausia*. The data obtained from the methodic observation extending for a period of seventeen months serve as valuable information on the growth rate of this species. Here the growth is correlated with salinity fluctuation.

The important physical factor affecting the organisms is the salinity of the medium. It affects the organisms in different ways. The salinity tolerance of *M. senhausia* and filtration rate in different salinities encountered in its habitat are presented in the fifth chapter.

The sixth chapter deals with the reproductive cycle of the organism. Histochemical aspects of different organic constituents are also studied.

The biochemical composition of *M. senhausia* forms the seventh chapter. Variation in different organic components like protein, glycogen and lipid are correlated with reproductive cycle of the species.

Summary of the work is presented in the eighth chapter followed by the list of references.